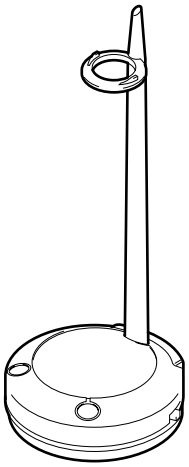
TMR-RF830R

SERVICE MANUAL

REVISED

Ver 1.2 1999. 09

AEP Model
UK Model



TMR-RF830R is the component model block one in MDR-RF830RK.

COMPONENT MODEL NAME FOR MDR-RF830RK

Wireless Stereo Headphones	MDR-RF830
Transmitter	TMR-RF830R

SPECIFICATIONS

General

Carrier frequency
863.32 – 863.67 MHz
Channel Ch1, Ch2
Modulation FM stereo
Frequency response
20 – 20,000 Hz

Transmitter

Power source DC 9 V: supplied AC power adaptor
Audio input phono jacks/stereo mini jack
Dimensions Approx. 120 mm dia × 290 mm ($4^{3}/_{4} \times 11^{1}/_{2}$ in.)(w/h)
Mass Approx. 155 g (5.5 oz.)

Design and specifications are subject to change without notice.

TRANSMITTER

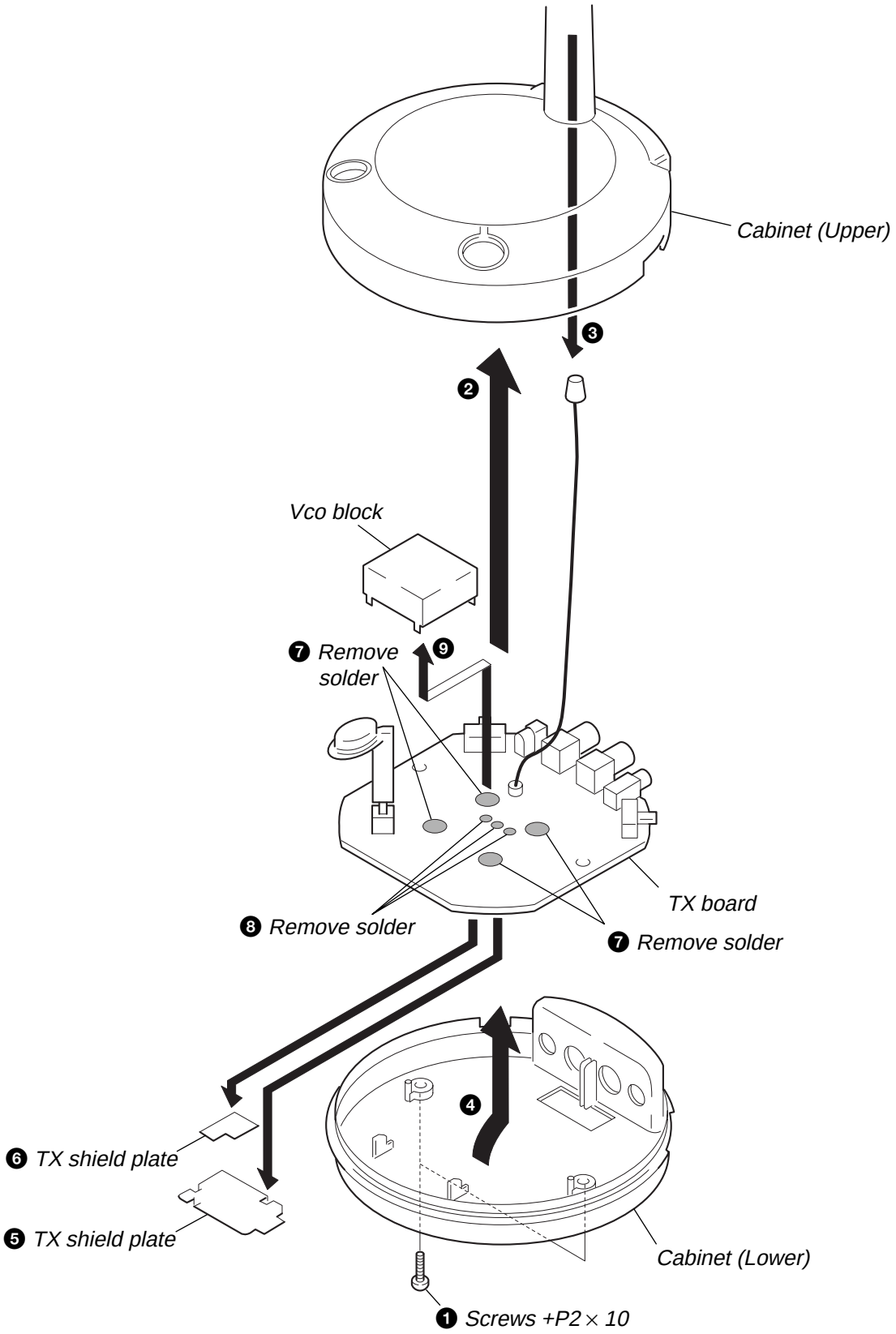
MICROFILM

SONY®

SECTION 1
DISASSEMBLY

Note : Follow the disassembly procedure in the numerical order given.

1-1. TX BOARD, VCO BLOCK



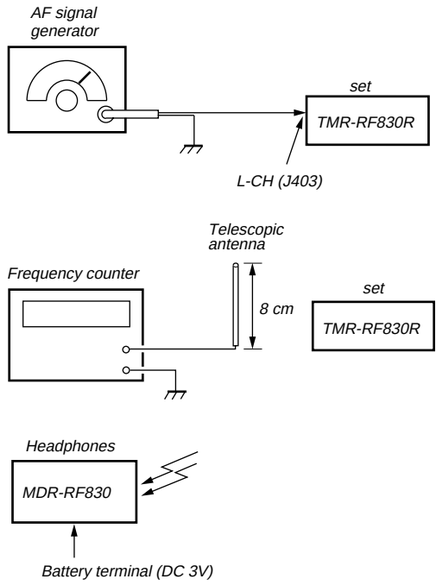
SECTION 2
ELECTRICAL ADJUSTMENTS

Note :

1. The transmitter section adjustments should be completed before performing the headphones section adjustment.
2. On adjusting the transmitter section, use the headphones as a jig.

Transmitter	Headphones
TMR-RF830R	MDR-RF830

Setting :



Send Frequency Check and Adjustment

1. Set the noise filter SW to OFF.
2. Input a signal of 1 kHz 40 mVrms to only the L-CH (J403).
3. Connect a telescopic antenna to the frequency counter input and extend the antenna to a length of approximately 8 cm.
4. Place TX board close to the frequency counter, then measure the frequencies of CH1 and CH2 and make sure the values are as follows:
   CH1 : 863.27 to 863.37 MHz
   CH2 : 863.62 to 863.72 MHz
   When the frequency is not satisfied the specified value, first set the channel switch (S402) to “2” and adjust CH2 frequency with L412, next set it to “1” and adjust CH1 frequency with L413. When completed with adjustment, recheck the frequecies of CH1 and CH2.

Main-Carrier (L+R) Modulation Check and Adjustment

1. Set the noise filter SW to off.
2. Set the channel to CH2.
3. Input a signal of 1 kHz 316 Vrms to the L-ch (J403) and the R-CH.(J402)
4. Measure the pin ② voltage of the TX board RV 404 using a digital voltmeter (AC range) and make sure the value is 75 to 95 mVrms. If the measured value is other than the specified value, adjust to 85mVrms by turning the RV 404 on the TX board.

Connection points and Adjustment Location :

TX board (See page 4)

Sub-Carrier (L-R) Modulation Check and Adjustment

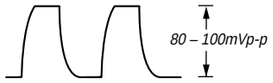
1. Set the noise filter SW to OFF.
2. Set the channel to CH2.
3. Input a signal of 1 kHz 316 mVrms to the L-CH (J403).
4. Measure the pin ① voltage of the TX board IC403 using an digital voltmeter (AC range) and make sure the value is 220 to 250 mVrms. If the measured value is other than the specified value, adjust to 235mVrms by turning the RV401 on the TX board.

Connection points and Adjustment Location :

TX board (See page 4)

Sub-Carrier Frequency/Level Check and Adjustment

1. Set the noise filter SW to OFF.
2. Set the channel to CH2.
3. Input a signal of 1 kHz 316 mVrms to only the L-CH (J403).
4. Connect a frequency counter and an oscilloscope between the pin ② of RV402 and GND.
5. Set the TX board L-CH (J403) input to OFF (not doing so will cause modulation in the sub-carrier, preventing correct measurement)
6. Check to make sure the frequency counter reading is 49 to 51kHz. If the measured value is other than the specified value, adjust the frequency to 50 kHz by turning the RV405 on the TX board. In addition, check to make sure the oscilloscope waveform is as follows :



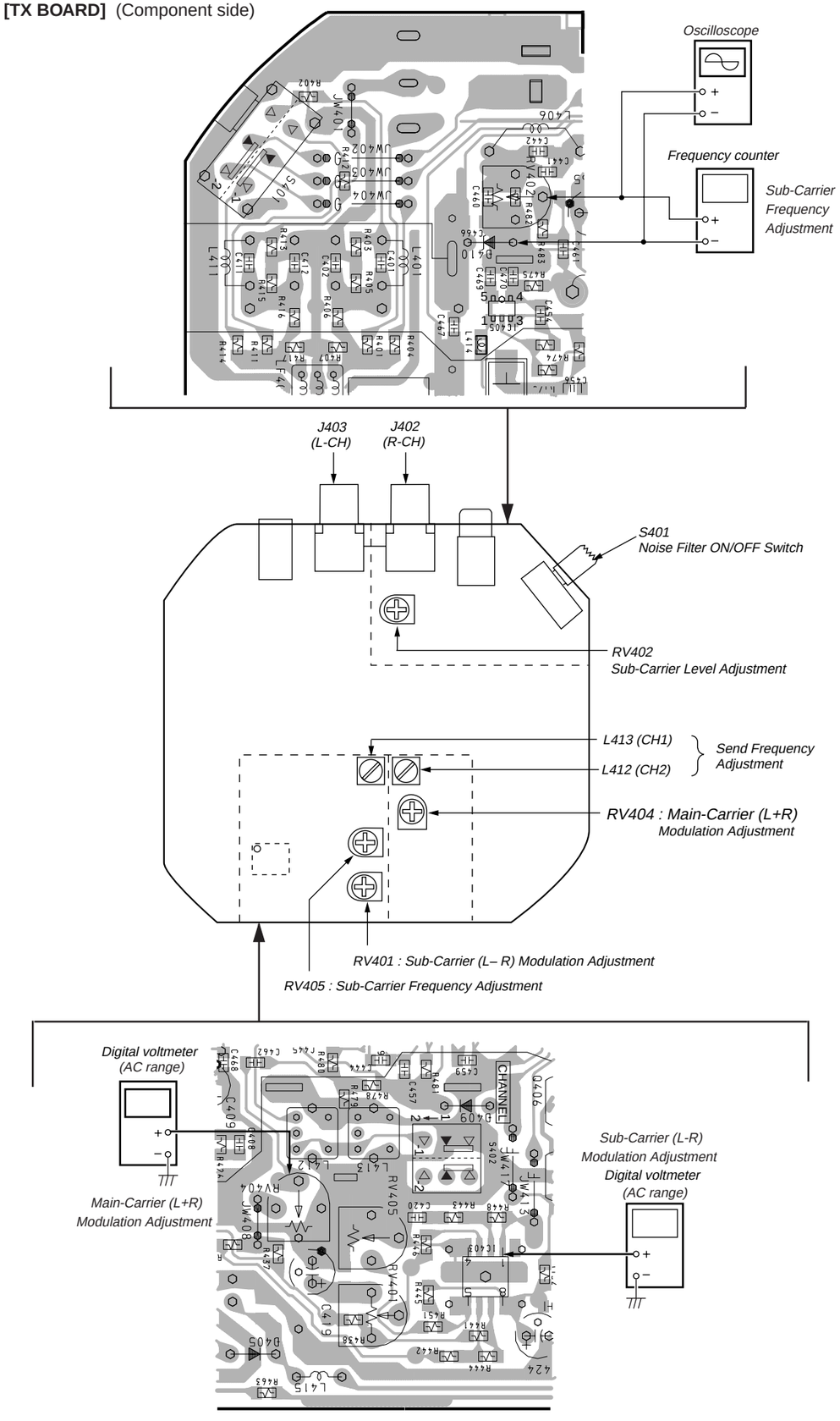
7. When the waveform P-P level is not satisfied the specified value, adjust to 90mVp-p with RV402.

   (Perform the check and adjustment within one minute since the transmitter AUTO OFF function will be activated approximately one minute after setting the transmitter L-ch input to OFF. If the AUTO OFF function activates, set the L-ch input to ON, set TX board to AUTO ON, set the L-ch input again to OFF, then make the check adjustment.)

Connection points and Adjustment Location :

TX board (See page 4)

[TX BOARD] (Component side)



SECTION 3
DIAGRAMS

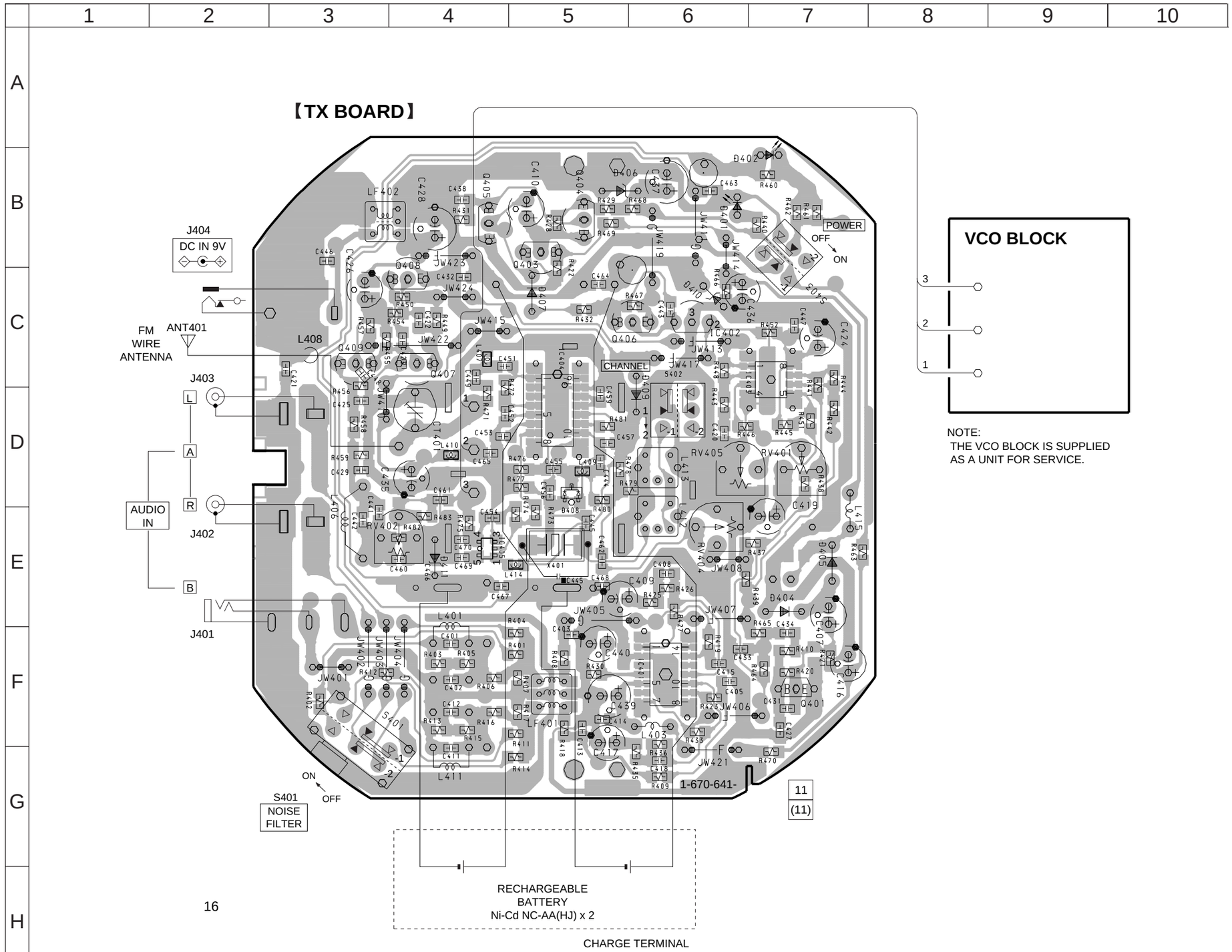
3-1. PRINTED WIRING BOARD

• **Semiconductor Location**

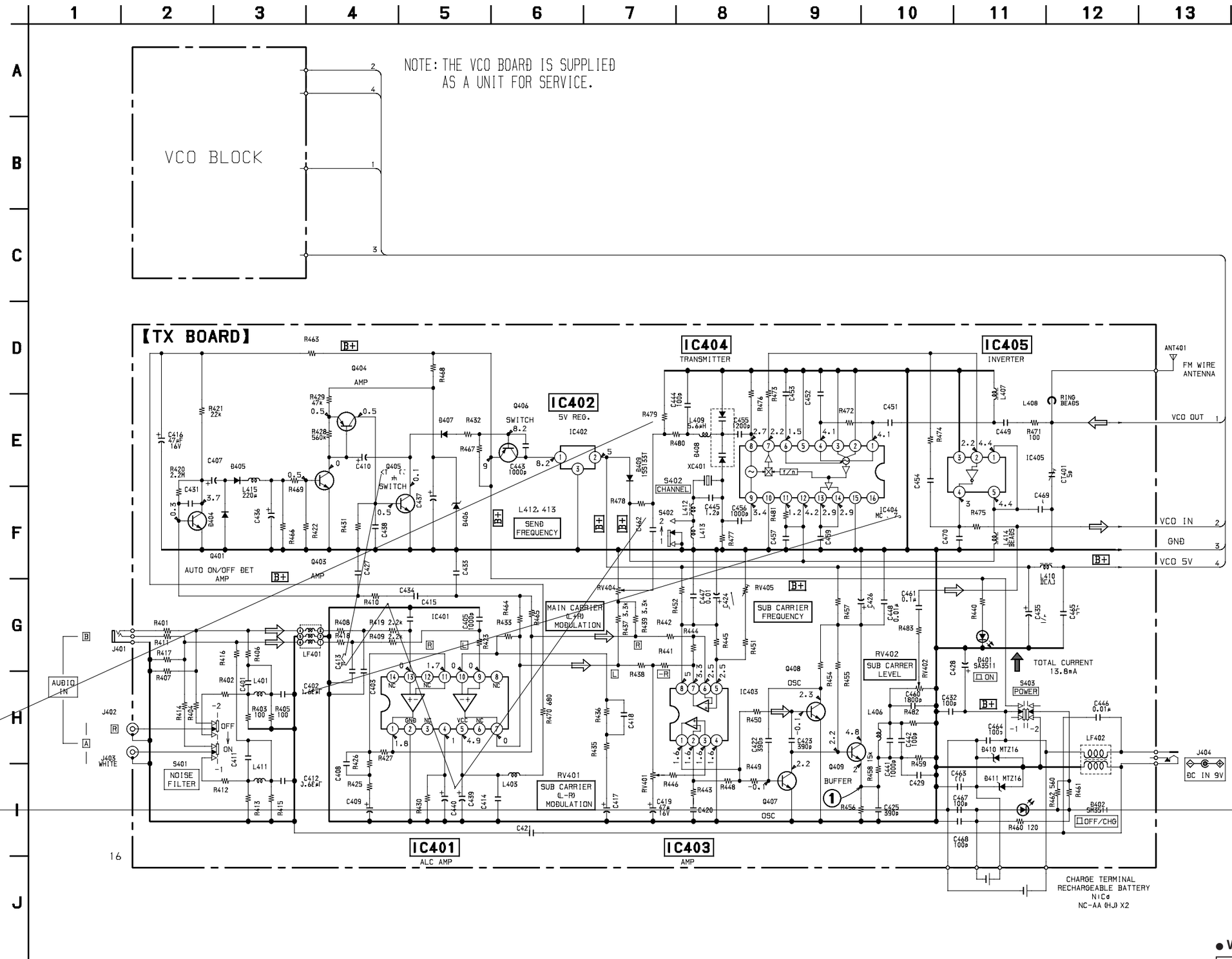
Ref. No.	Location
D401	B-6
D402	B-7
D404	E-7
D405	E-7
D406	B-5
D407	C-5
D408	D-5
D409	D-6
D410	C-6
D411	E-4
IC401	F-6
IC402	C-6
IC403	C-7
IC404	D-5
IC405	E-4
Q401	F-7
Q403	B-5
Q404	B-5
Q405	B-4
Q406	C-6
Q407	C-4
Q408	C-4
Q409	C-3

Note:
- ○—— : parts extracted from the component side.
- ■ : parts mounted on the conductor side.
- ○ : Through hole.
- ▒▒ : Pattern from the side which enables seeing.

Caution:	
Pattern face side: (SideB)	Parts on the pattern face side seen from the pattern face are indicated.
Parts face side: (Side A)	Parts on the parts face side seen from the parts face are indicated.



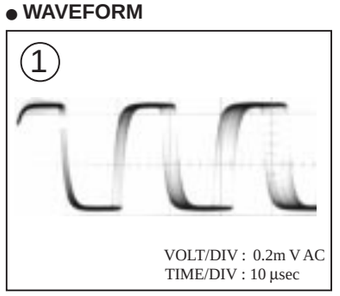
3-2. SCHEMATIC DIAGRAM



Note on Schematic Diagram:

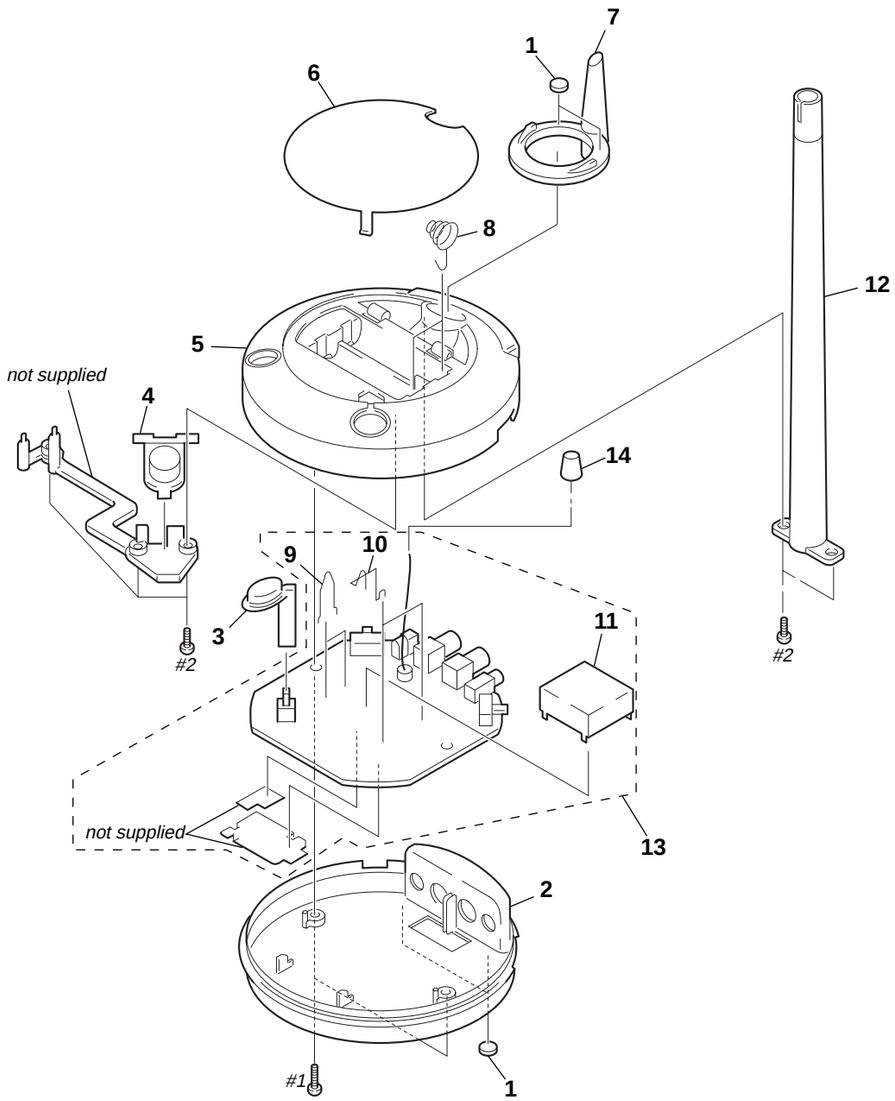
- All capacitors are in µF unless otherwise noted. pF: µµF 50 WV or less are not indicated except for electrolytics and tantalums.
- All resistors are in Ω and 1/4 W or less unless otherwise specified.
- △ : internal component.
- B+ : B+ Line.
- ▭ : adjustment for repair.
- Power voltage is dc 3 V and fed with regulated dc power supply from battery terminal.
- Voltages are dc with respect to ground under no-signal conditions.
- Voltages are taken with a VOM (Input impedance 10 MΩ). Voltage variations may be noted due to normal production tolerances.
- Waveforms are taken with a oscilloscope. Voltage variations may be noted due to normal production tolerances.
- Circled numbers refer to waveforms.
- Signal path. ⇨

● **WAVEFORM**



SECTION 4
EXPLODED VIEWS

NOTE:
- -XX, -X mean standardized parts, so they may have some differences from the original one.
- Items marked "*" are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.
- The mechanical parts with no reference number in the exploded views are not supplied.



Ref. No.	Part No.	Description	Remarks
1	4-984-729-01	FOOT, RUBBER	
2	4-994-922-11	CABINET (LOWER)	
3	4-994-931-01	BUTTON, POWER	
4	4-993-652-01	BUTTON, OPEN	
5	4-994-921-11	CABINET (UPPER)	
6	4-994-923-01	LID, BATTERY CASE	
7	4-994-925-01	CAP, ANTENNA	
8	4-987-658-02	SPRING, BATTERY COIL	
9	4-994-928-01	TERMINAL(+), CHARGE	
10	4-994-930-01	TERMINAL(-), CHARGE	
* 11	A-4542-539-A	VCO BLOCK	
* 12	4-994-924-01	PIPE, ANTENNA	
* 13	A-4542-538-A	TX BOARD, COMPLETE	
14	4-213-544-01	CUSHION, ANTENNA	

TX

SECTION 5
ELECTRICAL PARTS LIST

NOTE:
- Due to standardization, replacements in the parts list may be different from the parts specified in the diagrams or the components used on the set.
- -XX, -X mean standardized parts, so they may have some difference from the original one.
- RESISTORS
  All resistors are in ohms.
  METAL: metal-film resistor
  METAL OXIDE: Metal Oxide-film resistor
  F: nonflammable
- Items marked "*" are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.
- SEMICONDUCTORS
  In each case, u: µ, for example:
  uA...: µA... , uPA... , µPA... , uPB... , µPB... , uPC... , µPC... , uPD..., µPD...
- CAPACITORS:
  uF: µF
- COILS
  uH: µH

When indicating parts by reference number, please include the board name.

Ref. No.	Part No.	Description			Remarks
*	A-4542-538-A	TX BOARD, COMPLETE			
		**********			
	4-994-928-01	TERMINAL (+), CHARGE			
	4-994-930-01	TERMINAL (-), CHARGE			
		< CAPACITOR >			
C401	1-104-760-11	CERAMIC CHIP	0.047uF	10%	50V
C402	1-119-866-11	CERAMIC CHIP	0.68uF	10%	10V
C403	1-163-009-11	CERAMIC CHIP	0.001uF	10%	50V
C405	1-163-009-11	CERAMIC CHIP	0.001uF	10%	50V
C407	1-124-463-00	ELECT	0.1uF	20%	50V
C408	1-163-037-11	CERAMIC CHIP	0.022uF	10%	25V
C409	1-124-257-00	ELECT	2.2uF	20%	50V
C410	1-131-379-00	TANTALUM	22uF	10%	10V
C411	1-104-760-11	CERAMIC CHIP	0.047uF	10%	50V
C412	1-119-866-11	CERAMIC CHIP	0.68uF	10%	10V
C413	1-163-009-11	CERAMIC CHIP	0.001uF	10%	50V
C414	1-163-251-11	CERAMIC CHIP	100PF	5%	50V
C415	1-163-009-11	CERAMIC CHIP	0.001uF	10%	50V
C416	1-126-786-11	ELECT	47uF	20%	16V
C417	1-124-257-00	ELECT	2.2uF	20%	50V
C418	1-163-037-11	CERAMIC CHIP	0.022uF	10%	25V
C419	1-126-786-11	ELECT	47uF	20%	16V
C420	1-164-489-11	CERAMIC CHIP	0.22uF	10%	16V
C421	1-163-038-91	CERAMIC CHIP	0.1uF		25V
C422	1-163-131-00	CERAMIC CHIP	390PF	5%	50V
C423	1-163-131-00	CERAMIC CHIP	390PF	5%	50V
C424	1-126-786-11	ELECT	47uF	20%	16V
C425	1-163-131-00	CERAMIC CHIP	390PF	5%	50V
C426	1-126-786-11	ELECT	47uF	20%	16V
C427	1-163-021-91	CERAMIC CHIP	0.01uF	10%	50V
C428	1-126-382-11	ELECT	100uF	20%	16V
C429	1-163-012-00	CERAMIC CHIP	0.0018uF	5%	50V
C431	1-163-251-11	CERAMIC CHIP	100PF	5%	50V
C432	1-163-251-11	CERAMIC CHIP	100PF	5%	50V
C433	1-163-021-91	CERAMIC CHIP	0.01uF	10%	50V
C434	1-163-037-11	CERAMIC CHIP	0.022uF	10%	25V
C435	1-126-786-11	ELECT	47uF	20%	16V
C436	1-126-162-11	ELECT	3.3uF	20%	50V
C437	1-124-261-00	ELECT	10uF	20%	50V
C438	1-164-182-11	CERAMIC CHIP	0.0033uF	10%	50V
C439	1-126-382-11	ELECT	100uF	20%	16V
C440	1-124-234-00	ELECT	22uF	20%	16V
C441	1-163-009-11	CERAMIC CHIP	0.001uF	10%	50V
C442	1-163-251-11	CERAMIC CHIP	100PF	5%	50V
C443	1-163-009-11	CERAMIC CHIP	0.001uF	10%	50V

Ref. No.	Part No.	Description			Remarks
C444	1-163-251-11	CERAMIC CHIP	100PF	5%	50V
C445	1-162-188-31	CERAMIC CHIP	1.2PF	20%	50V
C446	1-163-021-91	CERAMIC CHIP	0.01uF	10%	50V
C447	1-163-021-91	CERAMIC CHIP	0.01uF	10%	50V
C448	1-163-021-91	CERAMIC CHIP	0.01uF	10%	50V
C449	1-163-222-11	CERAMIC CHIP	5PF	0.25PF	50V
C451	1-163-085-00	CERAMIC CHIP	2PF		50V
C452	1-163-251-11	CERAMIC CHIP	100PF	5%	50V
C453	1-163-021-91	CERAMIC CHIP	0.01uF	10%	50V
C454	1-163-021-91	CERAMIC CHIP	0.01uF	10%	50V
C456	1-163-009-11	CERAMIC CHIP	0.001uF	10%	50V
C457	1-163-038-91	CERAMIC CHIP	0.1uF		25V
C459	1-163-009-11	CERAMIC CHIP	0.001uF	10%	50V
C460	1-163-012-00	CERAMIC CHIP	0.0018uF	5%	50V
C461	1-163-038-91	CERAMIC CHIP	0.1uF	25V	
C462	1-163-038-91	CERAMIC CHIP	0.1uF	25V	
C463	1-163-251-11	CERAMIC CHIP	100PF	5%	50V
C464	1-163-251-11	CERAMIC CHIP	100PF	5%	50V
C465	1-163-251-11	CERAMIC CHIP	100PF	5%	50V
C466	1-163-251-11	CERAMIC CHIP	100PF	5%	50V
C467	1-163-251-11	CERAMIC CHIP	100PF	5%	50V
C468	1-163-251-11	CERAMIC CHIP	100PF	5%	50V
C469	1-163-251-11	CERAMIC CHIP	100PF	5%	50V
C470	1-163-251-11	CERAMIC CHIP	100PF	5%	50V
		< TRIMMER >			
CT401	1-141-485-11	CAP, ADJ 5PF			
		< DIODE >			
D401	8-719-066-59	LED SA3511 (POWER ON)			
D402	8-719-066-60	LED SM3511 (POWER OFF/CHG)			
D404	8-719-991-33	DIODE 1SS133T-77			
D405	8-719-991-33	DIODE 1SS133T-77			
D406	8-719-109-85	DIODE RD5.1ES-B2			
D407	8-719-991-33	DIODE 1SS133T-77			
D408	8-719-939-02	DIODE SVC203CP			
D409	8-719-991-33	DIODE 1SS133T-77			
D410	8-719-923-91	DIODE MTZJ-T77-16A			
D411	8-719-923-91	DIODE MTZJ-T77-16A			
		< IC >			
IC401	8-759-998-71	IC BA3308F			
IC402	8-759-537-90	IC KIA78S05P-TP			
IC403	8-759-701-39	IC NJM3404AM			
IC404	8-759-546-09	IC MC13176DR2			
IC405	8-759-243-19	IC TC7SU04F			

Ref. No.	Part No.	Description			Remarks
		< JACK >			
J401	1-764-270-11	JACK,STEREO MINIATURE(DIA.3.5)			(AUDIO IN B)
J402	1-784-910-11	JACK, PIN (AUDIO IN A R)			
J403	1-784-910-21	JACK, PIN (AUDIO IN A L)			
J404	1-573-667-11	JACK,DC (POLARITY UNIFIED TYPE) (DC IN 9V)			
		< COIL >			
L401	1-408-096-00	INDUCTOR	470uH		
L403	1-410-336-11	INDUCTOR	220uH		
L406	1-410-171-11	INDUCTOR	1mH		
L407	1-411-960-21	INDUCTOR	4.7nH		
L408	1-500-567-11	INDUCTOR			
L409	1-412-948-11	INDUCTOR	5.6uH		
L410	1-500-419-21	FERRITE	0uH		
L411	1-408-096-00	INDUCTOR	470uH		
L412	1-416-804-11	COIL			
L413	1-416-805-11	COIL			
L414	1-500-419-21	FERRITE	0uH		
L415	1-410-336-11	INDUCTOR	220uH		
		< LINE FILTER >			
LF401	1-411-236-11	FILTER, EMI			
LF402	1-403-601-21	FILTER, COMMON MODE			
		< TRANSISTOR >			
Q401	8-729-119-78	TRANSISTOR 2SC403SP-51			
Q403	8-729-045-02	TRANSISTOR KTC3200GR-AT			
Q404	8-729-045-00	TRANSISTOR SBX1639-02			
Q405	8-729-045-02	TRANSISTOR KTC3200GR-AT			
Q406	8-729-045-00	TRANSISTOR SBX1639-02			
Q407	8-729-045-02	TRANSISTOR KTC3200GR-AT			
Q408	8-729-045-02	TRANSISTOR KTC3200GR-AT			
Q409	8-729-045-02	TRANSISTOR KTC3200GR-AT			
		< RESISTOR >			
R401	1-216-085-00	METAL CHIP	33K	5%	1/10W
R402	1-216-304-11	METAL CHIP	3.3	5%	1/10W
R403	1-216-025-91	RES,CHIP	100	5%	1/10W
R404	1-216-085-00	METAL CHIP	33K	5%	1/10W
R405	1-216-025-91	RES,CHIP	100	5%	1/10W
R406	1-216-085-00	METAL CHIP	33K	5%	1/10W
R407	1-216-049-91	RES,CHIP	1K	5%	1/10W
R408	1-216-049-91	RES,CHIP	1K	5%	1/10W
R409	1-216-057-00	METAL CHIP	2.2K	5%	1/10W
R410	1-216-065-91	RES,CHIP	4.7K	5%	1/10W
R411	1-216-085-00	METAL CHIP	33K	5%	1/10W
R412	1-216-304-11	METAL CHIP	3.3	5%	1/10W
R413	1-216-025-91	RES,CHIP	100	5%	1/10W
R414	1-216-085-00	METAL CHIP	33K	5%	1/10W
R415	1-216-025-91	RES,CHIP	100	5%	1/10W
R416	1-216-085-00	METAL CHIP	33K	5%	1/10W
R417	1-216-049-91	RES,CHIP	1K	5%	1/10W
R418	1-216-049-91	RES,CHIP	1K	5%	1/10W
R419	1-216-057-00	METAL CHIP	2.2K	5%	1/10W
R420	1-216-129-00	METAL CHIP	2.2M	5%	1/10W

Ref. No.	Part No.	Description			Remarks
R421	1-216-081-00	METAL CHIP	22K	5%	1/10W
R422	1-216-121-91	RES,CHIP	1M	5%	1/10W
R423	1-216-295-91	SHORT	0		
R425	1-216-033-00	METAL CHIP	220	5%	1/10W
R426	1-216-061-00	METAL CHIP	3.3K	5%	1/10W
R427	1-216-097-91	RES,CHIP	100K	5%	1/10W
R428	1-216-115-00	METAL CHIP	560K	5%	1/10W
R429	1-216-089-91	RES,CHIP	47K	5%	1/10W
R430	1-216-133-00	METAL CHIP	3.3M	5%	1/10W
R431	1-216-097-91	RES,CHIP	100K	5%	1/10W
R432	1-216-081-00	METAL CHIP	22K	5%	1/10W
R433	1-216-097-91	RES,CHIP	100K	5%	1/10W
R435	1-216-033-00	METAL CHIP	220	5%	1/10W
R436	1-216-061-00	METAL CHIP	3.3K	5%	1/10W
R437	1-216-061-00	METAL CHIP	3.3K	5%	1/10W
R438	1-216-061-00	METAL CHIP	3.3K	5%	1/10W
R439	1-216-061-00	METAL CHIP	3.3K	5%	1/10W
R440	1-216-049-91	RES,CHIP	1K	5%	1/10W
R441	1-216-061-00	METAL CHIP	3.3K	5%	1/10W
R442	1-216-073-00	METAL CHIP	10K	5%	1/10W
R443	1-216-085-00	METAL CHIP	33K	5%	1/10W
R444	1-216-073-00	METAL CHIP	10K	5%	1/10W
R445	1-216-061-00	METAL CHIP	3.3K	5%	1/10W
R446	1-216-049-91	RES,CHIP	1K	5%	1/10W
R448	1-216-093-00	METAL CHIP	68K	5%	1/10W
R449	1-216-081-00	METAL CHIP	22K	5%	1/10W
R450	1-216-081-00	METAL CHIP	22K	5%	1/10W
R451	1-216-059-00	METAL CHIP	2.7K	5%	1/10W
R452	1-216-025-91	RES,CHIP	100	5%	1/10W
R454	1-216-057-00	METAL CHIP	2.2K	5%	1/10W
R455	1-216-057-00	METAL CHIP	2.2K	5%	1/10W
R456	1-216-057-00	METAL CHIP	2.2K	5%	1/10W
R457	1-216-025-91	RES,CHIP	100	5%	1/10W
R458	1-216-077-00	METAL CHIP	15K	5%	1/10W
R459	1-216-049-91	RES,CHIP	1K	5%	1/10W
R460	1-216-027-00	METAL CHIP	120	5%	1/10W
R461	1-216-043-91	RES,CHIP	560	5%	1/10W
R462	1-216-043-91	RES,CHIP	560	5%	1/10W
R463	1-216-037-00	METAL CHIP	330	5%	1/10W
R464	1-216-073-00	METAL CHIP	10K	5%	1/10W
R465	1-216-073-00	METAL CHIP	10K	5%	1/10W
R466	1-216-113-00	METAL CHIP	470K	5%	1/10W
R467	1-216-089-91	RES,CHIP	47K	5%	1/10W
R468	1-216-049-91	RES,CHIP	1K	5%	1/10W
R469	1-216-081-00	METAL CHIP	22K	5%	1/10W
R470	1-216-045-00	METAL CHIP	680	5%	1/10W
R471	1-216-025-91	RES,CHIP	100	5%	1/10W
R472	1-216-033-00	METAL CHIP	220	5%	1/10W
R473	1-216-097-91	RES,CHIP	100K	5%	1/10W
R474	1-216-079-00	METAL CHIP	18K	5%	1/10W
R475	1-216-073-00	METAL CHIP	10K	5%	1/10W
R476	1-216-068-00	METAL CHIP	6.2K	5%	1/10W
R477	1-216-089-91	RES,CHIP	47K	5%	1/10W
R478	1-216-083-00	METAL CHIP	27K	5%	1/10W
R479	1-216-089-91	RES,CHIP	47K	5%	1/10W
R480	1-216-057-00	METAL CHIP	2.2K	5%	1/10W
R481	1-216-083-00	METAL CHIP	27K	5%	1/10W
R482	1-216-049-91	RES,CHIP	1K	5%	1/10W
R483	1-216-073-00	METAL CHIP	10K	5%	1/10W

Ref. No.	Part No.	Description	Remarks
		< VARIABLE RESISTOR >	
RV401	1-241-764-11	RES, ADJ, CERMET 10K	
RV402	1-238-601-11	RES, ADJ, CARBON 22K	
RV404	1-238-601-11	RES, ADJ, CARBON 22K	
RV405	1-241-762-11	RES, ADJ, CERMET 2.2K	
		< SWITCH >	
S401	1-771-374-11	SWITCH, SLIDE (2C-2P)(NOISE FILTER)	
S402	1-692-729-11	SWITCH, SLIDE (CHANNEL)	
S403	1-771-375-11	SWITCH, PUSH (POWER)	
		< VIBRATOR >	
XC401	1-781-046-21	VIBRATOR, CRYSTAL	

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HARDWARE LIST
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#1	7-685-106-19	SCREW +P2 × 10 TYPE2 NON-SLIT	
#2	7-685-105-19	SCREW +P2 × 8 TYPE2 NON-SLIT	

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